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Management of Paediatric HIV infection

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Epidaemiology

- Almost 30% of women attending ANC are HIV+
- Estimated between 250 000 and 400 000 children infected
- Mortality in children ↑ by nearly 40% 1997-2002 (due to HIV)

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PMTCT

- HIV transmission to infants is a preventable condition (<2%)
- Without intervention ~30% HIV+ women transmit virus to baby
- Nevirapine single dose to mother and infant standard of care in SA (50% effective)
- Addition of AZT can reduce transmission further (WHO recommending)

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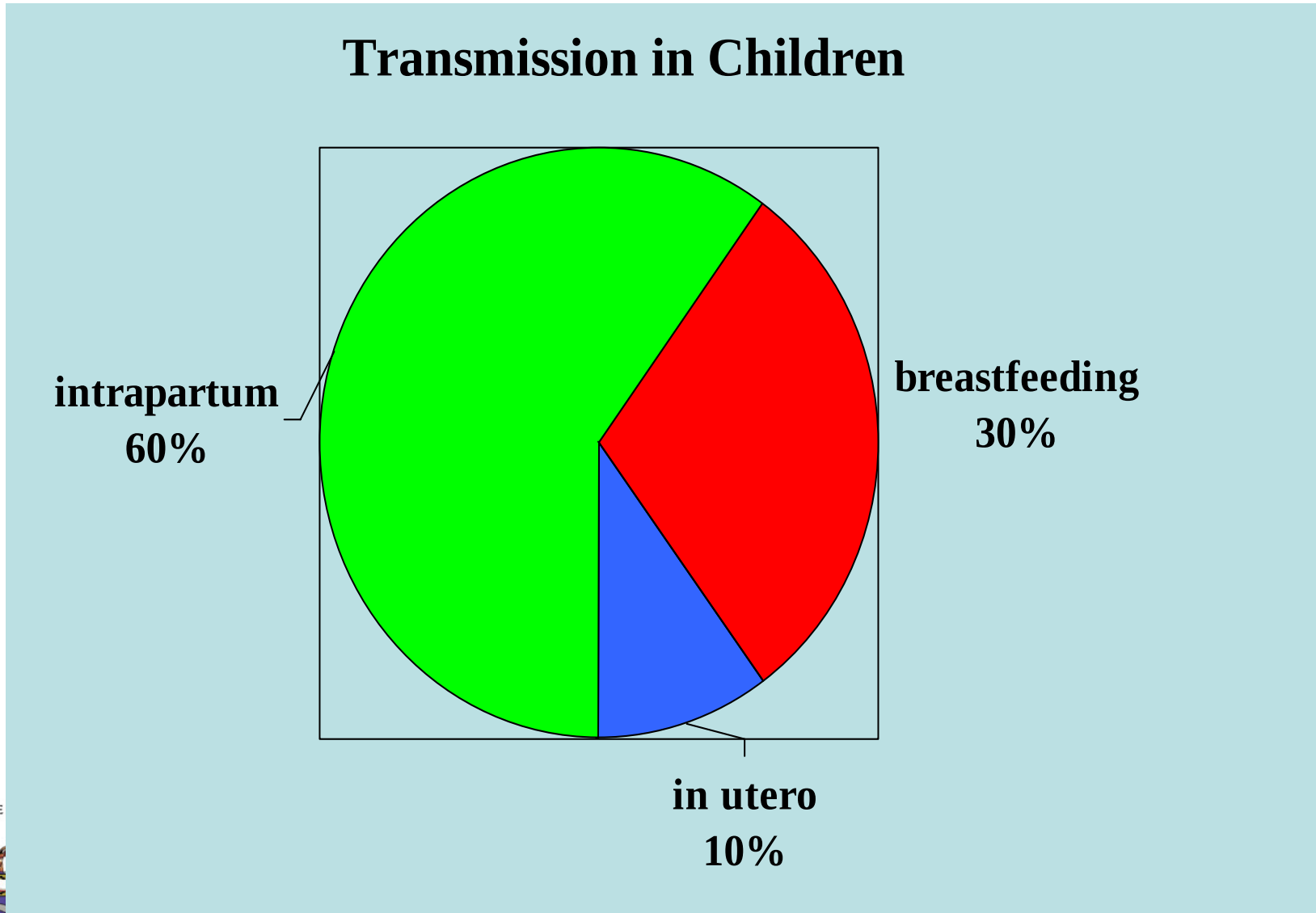
Mother to child transmission of HIV



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South African pMTCT Program

- VCT at ANC
- HIV+ women counselled on PMTCT and feeding options
- Nevirapine single dose to mother and child
- Formula provided x 6 months
- Women should get CD4 done when Dx HIV+ and started on triple therapy if <200

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Feeding Choices

- HIV transmitted through breast milk
- Exclusive breast feeding safer than mixed feeding
- WHO recommend that women adequately educated and supported in their feeding choice
- If women cannot safely formula feed, exclusive breast feeding should be advised for the first 4-6 months
- Research in SA indicates that reversal of benefit of nevirapine is occurring because of inadequate education and support by counselors

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Nevirapine for PMTCT

- Nevirapine (NVP) 1 dose to mother and 1 dose to infant can result in resistance in almost 50% of children
- Resistance to NVP → cross-resistance to NNRTI's
- Unclear whether NVP used in suppressive regimen after pMTCT will fail: await further research

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Diagnosis of HIV Infection in Children

- HIV ELISA test – antibodies to HIV
- Mothers transmit antibodies to baby through the placenta therefore:

HIV ELISA test positive ≠ infection

- Can use **HIV ELISA** to make diagnosis **>18 months** if positive = child infected

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Diagnosis of HIV Infection in Infants

- Early infant diagnosis (4-6 weeks) possible with HIV DNA PCR (tests for virus)
- If baby is breast-feeding can still become infected, PCR meaningless until at least 6 weeks after breast feeding ceases
- SA national paediatric HIV guidelines support early diagnosis
- Only about 20% of babies nationally currently being diagnosed early

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Cotrimoxazole (Bactrim prophylaxis)

- PCP common cause of mortality in young infants (3-6 months)
- Bactrim prophylaxis can reduce mortality in children
- Bactrim from 4-6 weeks of age in all HIV exposed babies
- Can be stopped if HIV-negative
- Continue all HIV infected until immune reconstitution on ARV

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Staging of HIV-infected Children

- Disease needs to be **staged clinically** and **immunologically**
- Some children will be **well** and **not yet** require antiretroviral therapy (**ART**)
- Those who meet **severe** clinical and/or immunological criteria should be **started on ART**

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WHO Staging of Paediatric HIV

4-stage system :

- Stage 1 – Asymptomatic
- Stage 2 – Mild
- Stage 3 – Moderate
- Stage 4 – Severe

Prognosticates in terms of when to initiate aniretroviral therapy

CD4+ lymphocyte counts and percentages

- CD4 counts are much higher in infancy than adulthood, but the CD4 percentage remains constant

- **CD4 PERCENTAGE** has been correlated with disease progression in children

SA National Guidelines: When to start? (Children)

- Recurrent (> 2 admissions per year) hospitalisations for HIV complications OR a prolonged hospitalisation for HIV(> 4 weeks) OR

- The patient satisfies the modified WHO Stage 3/4 disease

OR

- For relatively asymptomatic patients, one can consider CD4 percentage <20% if < 18 months or <15% if > 18 months.

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Psychosocial Criteria (children)

- At least one identifiable caregiver who is able to supervise child or administer medication (all efforts should be made to ensure that the social circumstances of vulnerable children e.g. orphans be addressed so that they too can receive treatment)

Disclosure to another adult living in the same house is encouraged so that there is someone else who can assist with the child's ART

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Child not meeting criteria for ART (well)

- Follow up regularly (3 monthly)
- Optimise health
  - Immunise
  - Nutrition (supplementation if necessary)
  - Deworm 6-monthly
  - Vitamin A 6-monthly
  - Prevention of opportunistic infection (bactri
- Repeat CD4 regularly (6-12 monthly)
- Repeat sooner if not growing, developing stage 3/4 disease
- NB Start treatment if meet criteria

Requirements for starting treatment in children

- Exclude **TB**
- Identify **responsible person** to administer ART
  - Adequate understanding of how to give treatment
  - Assurance that child will not miss doses
  - Awareness of side effects of treatment
- **Caution co-medication** may interact with antiretrovirals (natural remedies, preparations from traditional healers, other meds prescribed by other doctors)

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What are the benefits of antiretroviral treatment?

- **Suppresses** viral replication, does **NOT** eradicate virus
- Allows **regeneration** of immune system
- **Prevents** opportunistic infections
- Alters/reverses course of existing opportunistic infections
- **Decreases** hospitalizations
- **Increases** survival
- **Improves quality** of life
- Restores **hope**

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Regimens for Children (SA National Guidelines)

	6 months-3years	>3 years (>10kg)
1st line	Stavudine (d4T) Lamivudine(3TC) Kaletra®	Stavudine Lamivudine Efavirenz
2nd line	Zidovudine (AZT) Didanosine (DDI) Efavirenz/NVP	Zidovudine Didanosine Kaletra®

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Treatment Challenges

- Infants <6months high risk, less formulations available, treat with help from expert centre
- Some formulations no paediatric suspension
- Some liquid preparations unpalatable, large volumes, require refrigeration
- D4T capsules can be opened and dissolved to required dose, if volume of liquid too large and/or no refrigerator

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IS IT WORKING?

*CLINICAL IMPROVEMENT

- Fewer infections
- Weight gain

*HIV VIRAL LOAD DECREASES

(AIM FOR < 25)

*CD4 COUNT INCREASES

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Treatment failure

NB Discuss with referral centre

NB! adherence usual cause of regimen failure!!!

Evidence of failing regimen

- **Clinical deterioration** (new stage 3/4 event) not TB or immune reconstitution
- D**eclining CD4**
- **Increasing VL** not TB or other intercurrent infection

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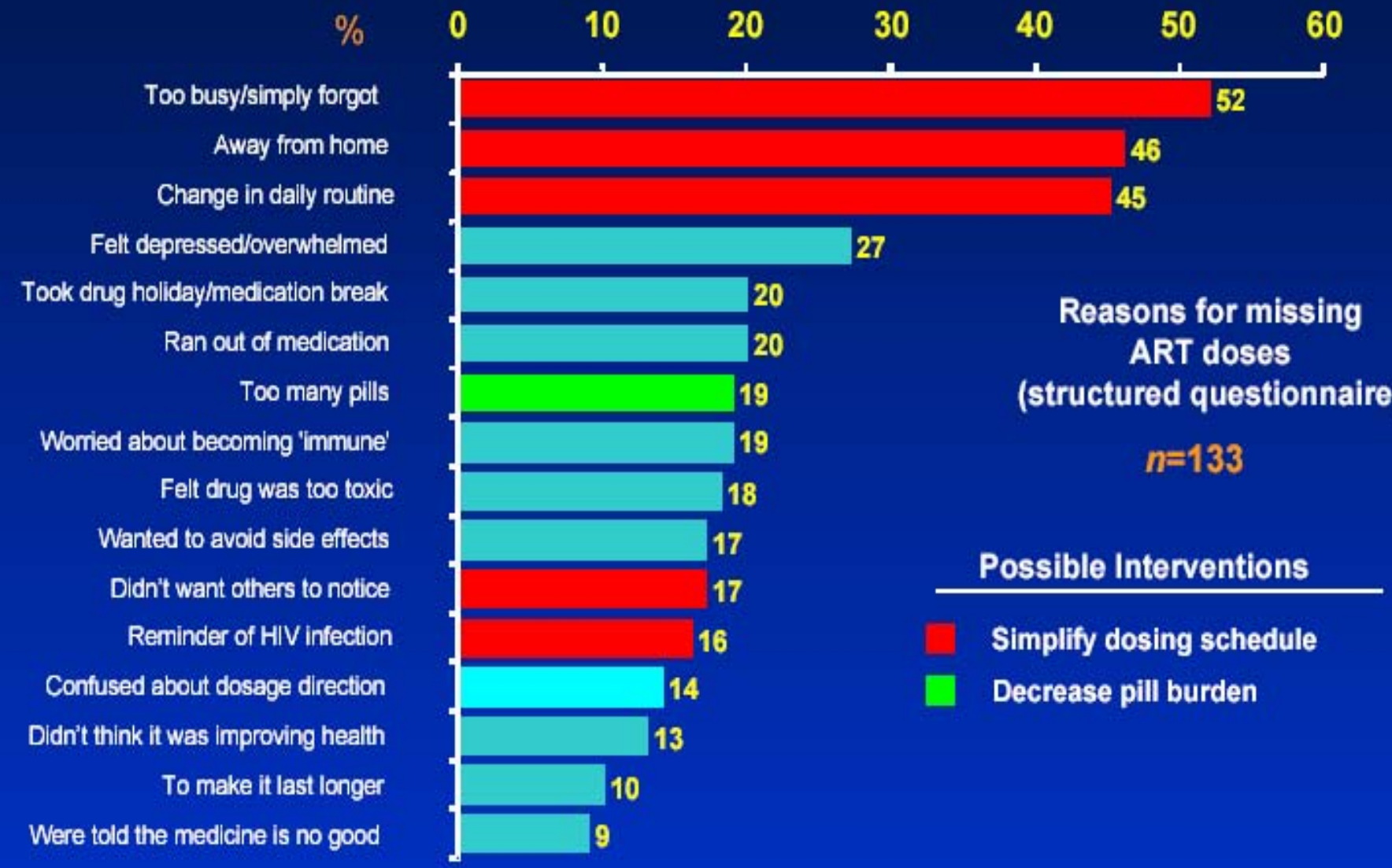
How Much Adherence Is Required?

Adherence	Viral Suppression
≥95%	80%
80-<94.9%	40%
<80%	20%

Adherence goals should always be 100%

Paterson et al., 2000

Why Do Patients Miss Doses?



Reasons for missing ART doses (structured questionnaire)

n=133

Possible Interventions

- Simplify dosing schedule
- Decrease pill burden

Adapted from: Gifford. JAIDS 2000; **23**: 386-395

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Thapelo before

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Thapelo on ART

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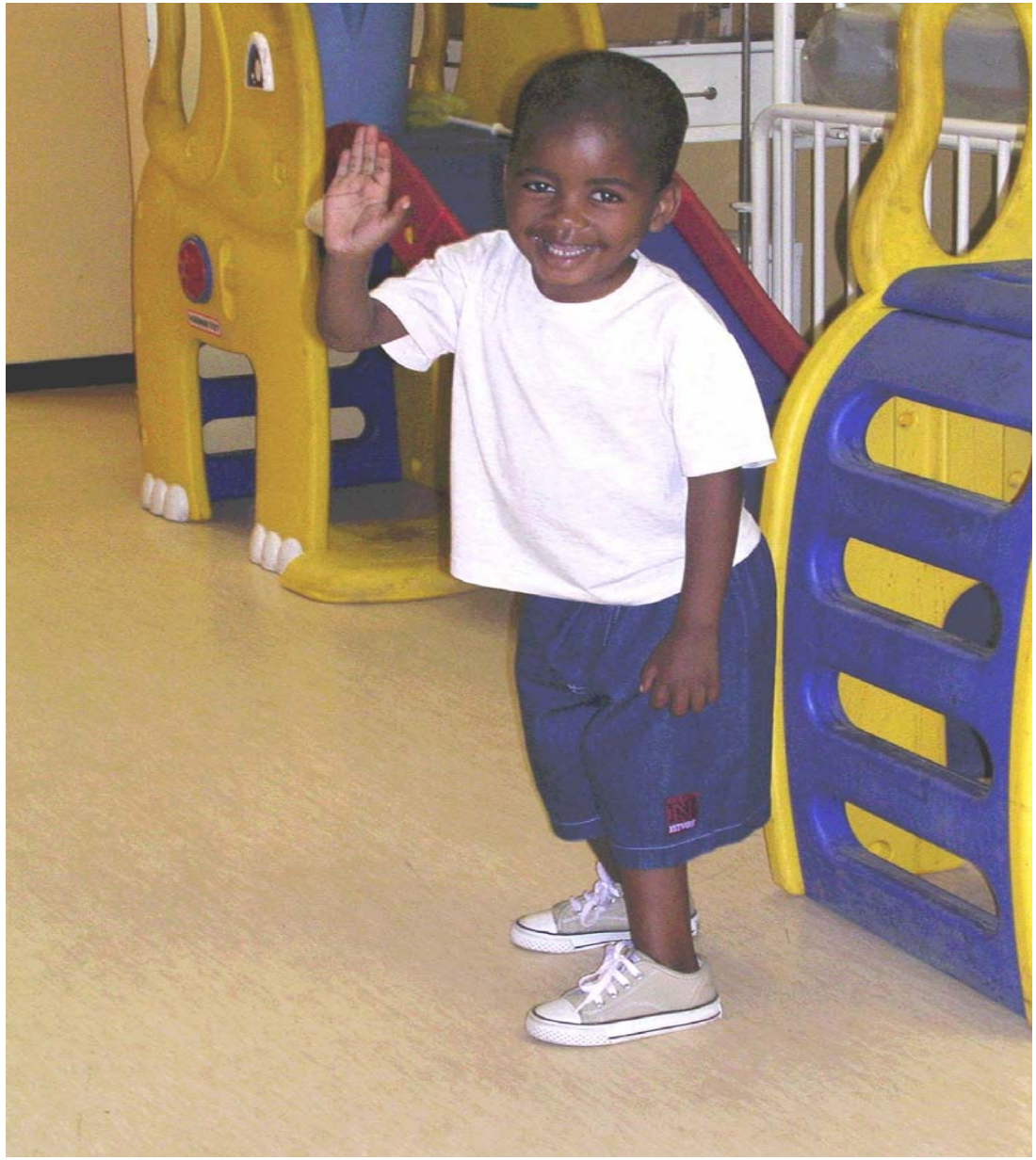

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